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ABSTRACT

Because there is a growing interest in improving the efficiency, effectiveness, and relevance of health personnel education, the World Health Organization formed a Study Group to discuss the uses of learner-oriented objectives, to examine the bases for identifying and selecting educational objectives, and to devise guidelines for evaluating such objectives. An educational objective was defined as a statement describing the expected results of learning experiences as they manifest themselves in the performance or behavior of the learner. Three levels of objectives were identified: institutional objectives--competencies which the student should have at the end of the educational program, intermediate objectives--which should be learned after a certain stage of the program, and specific learning objectives--which are applied at the end of a particular unit of teaching. The process of generating and evaluating objectives was discussed. Guidelines were then proposed to help administrators and teachers evaluate objectives. Most of the 37 items may be applied to all levels of the objectives generated for use in a health personnel education program. The appendix includes further definition of educational objectives, the purposes of explicitly stating objectives, some sources of objectives in the health professions, and guidelines for the statement of objectives. (BW)

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Criteria for the evaluation of learning objectives in the education of health personnel

Report of a
WHO Study Group

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WHO STUDY GROUP ON CRITERIA FOR THE EVALUATION OF LEARNING OBJECTIVES IN THE EDUCATION OF HEALTH PERSONNEL

Geneva, 30 November – 6 December 1976

Members :

Dr S. R. A. Dodu, Professor of Medicine, University of Ghana Medical School, Accra, Ghana

Dr V. V. Ermakov, Senior Lecturer, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Dr B. Joorabchi, Director, Regional Teacher Training Centre, Pahlavi University Medical Faculty, Shiraz, Iran (*Vice-Chairman*)

Dr H. A. Tiddens, Rector Magnificus, State University of Limburg, Medical Faculty of Maastricht, Maastricht, Netherlands (*Chairman*)

Miss L. M. Turnbull, formerly WHO Chief Nursing Officer, Saskatoon, Saskatchewan, Canada

Dr T. Varagunam, Director, Regional Teacher Training Centre, University of Sri Lanka Faculty of Medicine, Peradeniya, Sri Lanka (*Rapporteur*)

Secretariat :

Dr S. Abrahamson, Director, Division of Research in Medical Education, University of Southern California School of Medicine, South Pasadena, CA, USA (*Temporary Adviser*)

Dr J.-J. Guilbert, Chief Medical Officer for Educational Planning, Division of Health Manpower Development, WHO, Geneva, Switzerland (*Secretary*)

Dr H. Noack, Research Associate, WHO Collaborating Centre for the Evaluation of Health Personnel Performance, University of Berne Faculty of Medicine, Berne, Switzerland (*Temporary Adviser*)

Dr B. Pissarro, Professeur agrégé, Department of Social and Preventive Medicine, Saint Antoine Faculty of Medicine, Paris, France (*Temporary Adviser*)

CRITERIA FOR THE EVALUATION OF LEARNING OBJECTIVES IN THE EDUCATION OF HEALTH PERSONNEL

Report of a WHO Study Group

1. INTRODUCTION

A WHO Study Group on Criteria for the Evaluation of Learning Objectives in the Education of Health Personnel met in Geneva from 30 November to 6 December 1976. Opening the meeting on behalf of the Director-General, Dr T. Fülöp, Director, Division of Health Manpower Development, welcomed the participants and explained briefly why a study group on this subject had been convened.

There is a growing concern to improve the efficiency, effectiveness, and, most importantly, the relevance of health manpower education. It is important not to lose sight of the fact that health personnel are, fundamentally, instruments for providing health care. Similarly, the education of health personnel is merely one of the tools available for expanding and improving health care coverage and thereby for improving the health status of the people. Learning objectives, or educational objectives, are likewise only tools—important though they may be—for guiding the educational process towards relevance to the real health needs and demands of the population the graduates are going to serve. Educational objectives are useful mainly to the extent that they promote this kind of relevance.

It is against this background that the Study Group was asked to discuss the uses of learner-oriented educational objectives, to examine the bases for identifying and selecting educational objectives, and to devise guidelines for evaluating such objectives.

2. USES OF EDUCATIONAL OBJECTIVES

The ultimate purpose of educational objectives is to contribute to the maintenance or improvement of the health of the population by facilitating the education of health personnel, by ensuring that educational programmes are relevant to the health needs and demands of

the population that will be served by the graduates, and by providing a basis for the evaluation and supervision of health personnel. More specifically, educational objectives can be used for the following purposes:

— to give direction to educational programmes as a whole or to sequences of learning experiences within programmes
— to communicate to all concerned (politicians, consumers of health services, administrators, teachers, students) the intended results of the educational process
— to facilitate educational planning and decision-making by institutions and groups in institutions, as well as by individual teachers and students
— to improve the evaluation of whole programmes, sequences of learning experiences, teaching, and learning as regards expected results, effectiveness, and efficiency
— to develop further the responsibility of all concerned (both inside and outside the educational system) for the quality of health personnel education
— to encourage acceptance of continuous self-learning and self-assessment by health personnel.

Educational objectives can have an impact on educational programmes or processes to the extent that they are used in as many as possible of the ways stated above. However, the impact will be blunted if the objectives include trivialities and minutiae or concentrate only on easily achievable and expressible elements of behaviour. Educational objectives must be considered as tools and not as ends in themselves.

3. WHAT ARE EDUCATIONAL OBJECTIVES ?

For the purpose of this report an educational objective is taken to mean :

> a statement describing the expected results of learning experiences as they manifest themselves in the performance or behaviour of the learner.[1]

In this report educational objectives are always assumed to be *learner-oriented*, which is why they are also called *learning objectives*.

Educational objectives may be related to all stages of the educational process and to all dimensions of behaviour and activity. They may also

[1] For full discussion see Annex, pages 23–27.

reflect different levels of generality (or specificity). In this connexion, it is useful to distinguish the following three levels of educational objectives.[1]

Institutional objectives

These are statements that describe in general terms the competences a learner is expected to have at the end of an educational programme so as to perform the specified functions or tasks of his or her category of health worker, and in particular to solve problems connected with community health needs.

Intermediate objectives

These express in less general terms the competences a health worker is expected to possess at the end of a certain stage of the educational process in order to perform certain required tasks or to continue his or her education and training.

Specific learning objectives

Also called *specific instructional objectives* or simply *instructional objectives*, these are statements that describe the performance or behaviour of the learner expected to result from a specific unit of teaching and/or learning.

The interrelationship between the sets of institutional, intermediate, and specific learning objectives is of crucial importance : ideally, there should be close correspondence between them. This implies that, between as well as within the different levels, all statements of educational objectives should be consistent with each other and all institutional objectives should be followed by appropriate intermediate and instructional objectives.

4. GENERATING AND EVALUATING EDUCATIONAL OBJECTIVES

Generating educational objectives can be conceived of as a decision-making process involving the identification, written description, and evaluation of the desired results of learning in relation to the tasks to be performed by the health worker concerned. Only if there is a written statement of educational objectives can evaluation of them take place.

[1] For full discussion see Annex, pages 24–27.

There are always three important considerations whenever educational objectives are to be generated or evaluated. One must :

— *select the decision-makers* (teachers, students, administrators, educators, etc.), particularly on the basis of their background, professional affiliation, competence, and interests

— *consider the quality of the information available* on health requirements and needs, available financial support, functioning of health services, educational problems, and the characteristics of students and teachers

— *manage the decision-making process itself*, which calls for giving attention to the time available, the steps to be taken, and the results expected.

In generating educational objectives, a desirable approach is to proceed sequentially from the more general to the more specific. Ideally, this would require the following steps :

(*a*) generation of the institutional objectives, followed by

(*b*) generation of the intermediate objectives, followed by

(*c*) generation of the specific learning objectives.

At each step it is essential for the decision-makers to take into account :

— health needs of the population served by that category of health worker

— health policies and policies for health personnel education

— structure and functions of both the health care system and the educational system

— roles and functions of all categories of health workers within the system

— availability of manpower and resources

— characteristics of health workers, teachers, and students

— level of scientific and technological development in the country

— traditions, culture, and value system of the population.

Decision-makers should not only consider these elements as they are at present but should also give some thought to how they might be expected to evolve over time.

When educational objectives are being evaluated, it is important to consider the *process* by which they were generated as well as the *products* of the generation process (i.e., the objectives themselves).

In so far as the *process* is concerned, to ensure the relevance and consistency of educational objectives at all three levels it is desirable, as stated above, to derive the specific objectives from the intermediate objectives and the latter from the institutional objectives. If this sequence is not followed in the process of generating educational objectives, it may prove very difficult to evaluate their consistency and relevance. If either institutional or intermediate objectives are lacking altogether, an evaluation of consistency becomes frankly impossible.

A further requirement for both intermediate and specific educational objectives is that the sequence of learning experiences to which they refer must be clearly specified. This sequence may be a particular phase or part of the educational programme, a course, or a unit of individual learning. In addition, it is important for objectives at these two levels to be generated and evaluated jointly by teachers and students.

When evaluating the *products*—the objectives themselves—one must ascertain whether they are :

— consistent with the actual learning or work situation of the health worker involved

— relevant to the health problems of the community he or she will serve

— worded in terms of the behaviour or action by which it can be determined whether the learner has achieved the desired results.

Another quality to be sought in statements of objectives is clarity. If an objective includes unclear terms or is worded so generally as to require further interpretation, examples should be provided to clarify its meaning. The examples should refer to observable actions or behaviour that would permit one to draw conclusions about the student's success in achieving the objective (see discussion of this point in the Annex, pages 39–42).

5. INTENTION AND LIMITATIONS OF GUIDELINES

The guidelines proposed in the following section are intended to help teachers and administrators carry out the difficult task of examining their objectives to see whether these meet requirements with respect to (1) the process by which they were developed and (2) the way in which they are stated. Almost all the items are phrased in terms of what

the Study Group considers to be desirable qualities of educational objectives in both these respects. A few questions do refer to negative qualities because it was difficult to phrase them in a positive way.

The items in the guidelines are applicable at one or more of the three levels of educational objectives (institutional, intermediate, and specific). However, the items in Part 1 are particularly important when it comes to institutional and intermediate objectives, while most of the items in Part 2 are applicable only to specific instructional objectives. Although worded in the plural, some items can be applied to either a single objective or a whole set of objectives.

For each item the user can either check one of the answers given (√) or write in a word, phrase, or sentence. Users of the guidelines are strongly urged to answer each item in writing, whether or not the completed form will be reviewed by others. In a few cases it may not be possible to respond by checking one of the printed answers because (1) the item is not applicable, (2) the user is not able to obtain the necessary information, or (3) the right answer is not among the replies listed. Such a possibility has been provided for by the inclusion under most items of a category designated " Other " as well as a space for " Remarks ", in which the user may write " not applicable ", " information not available ", or an explanation of why he has checked the category " Other ".

A few qualifying remarks about the guidelines are in order. The Study Group wishes to emphasize that :

— the guidelines contain criteria for judging how an educational objective was generated and how it is worded but *not* for judging its validity apart from these two considerations

— the guidelines inquire about the specific process by which the objective was decided upon as one clue to its relevance and significance

— as indicated in the guidelines, the generation and evaluation of an educational objective always requires reference to its level of specificity

— an educational objective cannot be evaluated out of context, which is why the guidelines emphasize taking account of the specific health care situation as well as the learning or teaching situation.

While there may be other approaches to the evaluation of educational objectives, the Study Group believes that the application of these guidelines will serve a useful purpose. There is, however, a great need for empirical data to validate the assumptions contained in the guidelines concerning the desirable qualities of objectives. Users of the guidelines are therefore

urged to study the extent to which educational programmes, teaching and testing practices, and student learning are affected by the existence of well stated educational objectives.

6. GUIDELINES FOR EVALUATING EDUCATIONAL OBJECTIVES [1]

Part 1. Most of these items may be applied to all levels of objectives. However, some may not be applicable to intermediate-level objectives and many of them may not be applicable to specific instructional objectives.

1. Are the objectives stated in some written form ?

   Remarks :

2. Do the objectives reflect the community's real health needs ? If so, which of the following are reflected ?

   2.1 Present and future health problems
   2.2 Present and future functions of this category of health worker
   2.3 Functions of other health workers
   2.4 Expectations of health care consumers
   2.5 Expectations of health care workers
   2.6 Interrelationship between health needs and other needs of society
   2.7 Official government health policies
   2.8 Structure of the existing and future health care system
   2.9 Available data and research on health care and health manpower
   2.10 Current health manpower planning
   2.11 Other (please specify)

   Remarks :

[1] These guidelines may also be of value in the *formulation* of educational objectives by indicating the desirable qualities such objectives should have.

3. When the objectives were developed, were the following factors considered ?

   3.1 Costs to community *versus* community resources
   3.2 Characteristics of students
   3.3 Available teaching facilities
   3.4 Cultural setting of the educational institution
   3.5 Existing educational system(s) and philosophies
   3.6 Orientation of political and professional organizations
   3.7 Other (please specify)

   Remarks :

4. Are students informed about the objectives ?

   4.1 Students were given copies of the objectives
   4.2 Students have seen them and discussed them (if so, under what circumstances ?)
   4.3 Students have not seen them (if not, why not ?)
   4.4 Some of the students have probably seen them (if so, why only " some " of the students ?)

   Remarks :

5. Are teachers informed about the objectives ?

   5.1 Teachers were given copies of the objectives
   5.2 Teachers have seen them and discussed them (if so, under what circumstances ?)
   5.3 Teachers have not seen them (if not, why not ?)
   5.4 Some of the teachers have probably seen them (if so, why only " some " of the teachers ?)

   Remarks :

6. Has consideration been given to how the objectives will be used ?

Remarks :

7. Has the existence of the objectives had any impact on the following aspects of the educational programme ?

   7.1 Teaching/learning activities (if so, please give examples)
   7.2 Evaluation methods (if so, please give examples)
   7.3 Other (please specify)

Remarks :

8. As you examine the set of objectives, do you believe that anything will come of their existence ?

   8.1 They will be achieved
   8.2 They will facilitate student learning
   8.3 They will facilitate evaluation
   8.4 Other (please specify)
   8.5 They may not even be used

Remarks :

9. When the objectives were developed, which of the following persons were involved in either developing or reviewing them ?

   9.1 Teachers (if so, please state what disciplines or professions)
   9.2 Practitioners (if so, please state what disciplines or professions)
   9.3 Process experts (i.e., educational scientists)
   9.4 Students
   9.5 Administrators (education, health, economy)
   9.6 Consumers' representatives
   9.7 Others (please specify)

Remarks :

10. Are there provisions for a periodic review of the objectives?

If so, what is the review based on?

10.1 Students' performance data
10.2 Operational research data
10.3 Evidence of changing needs
10.4 Other (please specify)

If so, who is involved in the review?

10.5 Teachers
10.6 Practitioners
10.7 Process experts (i.e., educational scientists)
10.8 Students
10.9 Administrators
10.10 Consumers
10.11 Others (please specify)

Remarks :

11. How was the final decision made concerning the adoption and, where applicable, the use of the objectives?

11.1 By me alone (if so, please explain why)
11.2 By my administrative supervisor (if so, please explain why)
11.3 By the chief institutional administrator (if so, please explain why)
11.4 By my departmental committee (if so, please explain why)
11.5 Jointly (if so, please indicate who was involved)
11.6 Other (please specify)

Remarks :

12. In the total set of objectives, are complex objectives (e.g., objectives related to problem-solving or attitudinal change) more numerous than easily stated and/or easily achieved objectives (e.g., those

related to simple recall of facts) ? If so, please indicate the approximate proportion and give some examples.

Remarks :

13. Are the objectives learner-oriented ?
    - 13.1 Do they relate to the actual work the learner is going to do after qualification ?
    - 13.2 Do they describe what the graduate will be able to do ?
    - 13.3 Do they facilitate an integrated approach to learning ?
    - 13.4 Do they facilitate a problem-based approach to learning ?

Remarks :

14. Do the objectives represent an adequate sample of the expected competences ? If so, please indicate how the sample was derived.

Remarks :

15. Are the objectives directed towards significant results of learning in all domains (i.e., knowledge, skills, and attitudes) ?
    - 15.1 Do some of them facilitate personal affective (attitudinal) development ?
    - 15.2 Do some of them facilitate the development of intellectual inquiry ?
    - 15.3 Do some of them facilitate development of the " total person " ?
    - 15.4 Are some of them specifically designed to promote the development of competence (and, where appropriate, leadership competence) for team work ?
    - 15.5 Do some refer to development of skills in research methods ?

Remarks :

16. Are the objectives consistent with one another ?
    16.1 Do some objectives contradict others ? (if so, please give an example)
    16.2 Do some objectives support others ? (if so, please give an example)
    16.3 Are objectives listed according to some organizing principle ?

    Remarks :

17. Are the objectives understandable ?
    17.1 Have terms been defined ?
    17.2 Have vague expressions been used ?

    Remarks :

18. Are the objectives realistic with regard to :
    18.1 Characteristics of students
    18.2 Characteristics of teachers
    18.3 Facilities available
    18.4 Time available for learning
    18.5 Other (please specify)

    Remarks :

19. Are the institutional objectives related to other levels of objectives ? If so, what is the evidence of their relationship ?

    Remarks :

20. Does the set of objectives refer to the need for lifelong (continuous) self-learning ? If so, please give an example.

Remarks :

21. Does the set of objectives refer to the need for lifelong (continuous) self-assessment ? If so, please give an example.

Remarks :

22. Does the set of objectives reflect the scientific base for problem-solving needed by that category of health worker ?

Remarks :

23. Does the set of objectives reflect the current state of the technology used by that category of health worker ?

Remarks :

24. Do some objectives reflect the importance of the health worker's responsibility to society ?

Remarks :

25. Can some of the objectives be used as indicators of the quality of health care ? If so, please give an example.

Remarks :

26. Do some objectives recognize the need to prepare the health worker to be responsive to new types of practice ?

Remarks :

27. Are the objectives biased by special interest group pressures ? If so, please explain.

Remarks :

28. Are the objectives biased by narrow specialty or disciplinary interests ? If so, please explain.

Remarks :

29. Does each objective describe a specific competence that is significantly related to the performance of one or more of the tasks of that health worker ?

Remarks :

Part 2. These items are to be applied to specific instructional objectives ; however, some may also be applicable to intermediate-level objectives.

30. Have the specific instructional objectives been derived from institutional and/or intermediate objectives ? If not, please explain.

Remarks :

31. In the absence of institutional objectives, what mechanism has been used to ensure that society's real health needs are reflected in the objectives ?

Remarks :

32. Do specific instructional objectives pertaining to a large unit of learning cover all domains of learning (i.e., knowledge, skills, and attitudes) ?

Remarks :

33. Does each objective make a contribution to the achievement of institutional (or intermediate) objectives, where these exist ?

Remarks :

34. Does each objective use a verb describing an action or operation to be performed by the student ?

34.1 When the objective involves a cognitive process and uses a verb like " know " or " understand ", does it also specify *how* the learner should demonstrate his knowledge or understanding ? [1]

34.2 When the objective involves an affective state and uses a verb like " feel " or " appreciate ", does it also specify *how* the learner should demonstrate his feeling or appreciation ? [2]

Remarks :

35. Does each objective describe a significant result of learning ? If the objective involves details that seem trivial or insignificant, what is their justification ?

Remarks :

36. Wherever possible, do the objectives give an indication of the acceptable standard of performance the learner is to achieve ? If so, state what percentage of specific instructional objectives include such an indication and give examples.

Remarks :

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[1] For example, an objective calling for an understanding of the principles of carbohydrate metabolism might be worded as follows : " the learner must understand the principles of carbohydrate metabolism *well enough to be able to diagnose diabetes* ".

[2] For example, an objective calling for the learner " to appreciate the balance between patience and persistence " might specify " *to the extent that the learner avoids undue anger in working with an uncooperative, frightened child* ".

37. Does each objective contain the necessary elements (e.g., performance standard, behavioural criteria) to permit the construction of an appropriate procedure for measuring the learner's success in achieving the objective ?

Remarks :

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The Study Group acknowledges the special contribution to its deliberations made by Dr F. Katz, Chief Scientist for Educational Evaluation, Division of Health Manpower Development, WHO, Geneva, Switzerland.

Annex

LEARNING OBJECTIVES IN THE EDUCATION OF HEALTH PERSONNEL [1]

So much has been written in recent years about " educational objectives " [2] that one hesitates to produce what might be thought of as " one more paper on objectives ". The concerned reader need only consult a bibliography to discover works by Robert Mager, Jerrold Kemp, Cecil Clark, and W. J. Popham, among many others, and to become supersaturated with the principles, practices, and problems associated with the subject of educational objectives.

The terms in use have not become standardized over the years. One can find a host of nouns and as many modifiers, as the following list indicates :

general aims
goals (institutional goals, departmental goals, overall goals, proximate goals, mediate goals, ultimate goals)
purposes
outcomes (desired outcomes, learning outcomes, behavioural outcomes)
results (desired results)
objectives
- behavioural objectives
- departmental objectives
- educational objectives
- enabling objectives
- institutional objectives
- instructional objectives
- intermediate objectives
- learning objectives
- overall objectives
- societal objectives
- specific instructional objectives
- specific objectives
- terminal objectives.

To answer the obvious need for acceptable working definitions, this annex first attempts to clarify the concepts and ideas associated with

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[1] This annex is based on a working paper prepared for the Study Group meeting by Dr S. Abrahamson, Director, Division of Research in Medical Education, University of Southern California, USA, and incorporates amendments proposed by members of the Study Group.

[2] This statement applies mainly to the English-language literature.

educational objectives. In this connexion, readers are encouraged to make themselves familiar with the existing literature on the subject, or at least that portion of the literature concerned with statements of educational objectives for medical students or other health workers. A short bibliography is appended for the purpose (pages 46–47).

After an examination of the different levels and types of objectives, the annex goes on to review the potential benefits of defining objectives, the possible sources of educational objectives, and the manner in which objectives should be stated. It concludes with a short set of recommendations that were used by the Study Group in developing guidelines for the evaluation of educational objectives.

WHAT ARE EDUCATIONAL OBJECTIVES?

No matter how terms are ultimately defined, no matter what fine distinctions are made between them, there is no disagreement that an educational institution has a universally understood and accepted reason for its existence, called its "aim", "purpose", or "goal". The primary (if not only) goal of an educational institution is to educate its students. In the case of a school for health workers, the primary goal is to prepare individuals to perform certain health tasks in a specified setting in response to societal needs. For example, the primary purpose of a medical school is to produce new physicians who will practise medicine in one of its many forms and in one of its many settings. A school for health workers may well have other goals than the education of its students. Moreover, the form of health practice may vary considerably, and this would then be reflected in the statement of the school's goals. But the broad goal of an educational institution can undeniably be defined in terms of the "role" to be played by its graduates and the "practices" to be performed by them.

Present-day writers have made it abundantly clear that such statements of goals leave much to be desired. They are usually quite vague. Miller and his associates called them "broad, ... all-inclusive, ... inspiring statements to which it is not difficult to swear allegiance" (Miller et al.,[1] page 81). In order to be more specific, today's educators are saying that *objectives* should describe "... what the *learner* is to be like when he has successfully completed a learning experience" (Mager, page 3).

[1] The works cited are those listed in the selected bibliography, pages 46–47.

One way of clarifying the situation is to acknowledge that there can be different *levels* of objectives : there is a rational place for a broad statement of purpose alongside the more specific statements of educational (or learning) objectives, which are the ones deserving greatest emphasis. The next section defines three such levels : (1) institutional (or overall) objectives, (2) intermediate (or departmental) objectives, and (3) specific instructional objectives.

Throughout the remainder of this annex, except where otherwise specified, the term " objective " will be used to mean *a statement describing the expected results of learning experiences as they manifest themselves in the performance or behaviour of the learner, at any level of expertise and for any type of work ; these results may be qualified by appropriate modifiers that are defined in the objective itself.*

Levels of objectives

The broadest or most comprehensive objective is the statement of an institution's aim or purpose. This is normally the " reason " for the existence of the school. A medical school, for instance, might state as one of its primary, institutional objectives that at the end of their formal training the graduates should be " able, qualified, and motivated to practise curative medicine ".

Once that broad statement is made, the various components within the institution (departments, divisions, chairs, etc.) are in a position to state what they expect to contribute to the achievement of that institutional objective. A department of biochemistry in a medical school might state, *inter alia*, that " students should be able to apply knowledge in biochemistry to the solution of medical problems ".

Within a departmental teaching programme, specific instructional objectives can now be stated, e.g., " students will be able to describe the processes of the Krebs cycle in the right order, omitting no more than one step ".

The relationship between these three levels is further defined below.

(1) *Institutional objectives*

These are the broad, general statements that simply describe an institution's " end-product ". Such statements should provide direction and limits to the institution's efforts by describing the ultimate role, function, and/or tasks that the graduates must assume in order for them to engage in the health work in question. Institutional objectives should not specify what is to be learned or how it is to be learned (or, as it is

sometimes phrased, what is to be taught or how it is to be taught), although some inferences as to desirable learning activities may be drawn from them.

Very few schools for health workers have prepared a formal statement of institutional objectives. Unfortunately, in the absence of an institutional level statement, the departments or other components of the school are free to fashion their own objectives without regard to whether they are contributing to the broader institutional objectives and without regard to whether the sum total of all educational efforts will " produce " the desired health worker. Even worse is the more familiar situation in which the school's departments, in the absence of institutional objectives, likewise do not state their own departmental objectives but instead simply design their courses and other learning experiences with only the vaguest sense of purpose; in such cases it is the individual interests of the teachers in each department that determine which courses are to be emphasized.

To avoid such situations, it is incumbent upon an institution to define its broad, overall objectives. For those who claim the task is too difficult and time-consuming, it should be pointed out that even a one-paragraph statement may serve to set the needed guidelines for departments. In one medical school, a major contribution to curriculum development was made when a committee wrote and formally adopted the following statement, after weeks of heated discussion : " Since more than ninety percent of the graduates of this School of Medicine ultimately enter the practice of medicine in one of its present forms, our major institutional objective is to provide the education and training necessary for them to enter that practice and to function at a professionally acceptable level of quality of care ". Critics at the school scoffed and said that the committee had merely stated the obvious. However, that such a statement contains much more than the obvious becomes apparent when one begins to examine the next level of objectives to see if they serve the institutional objective, are at least consistent with it, and do not contradict it. It is the relationship between the two levels that makes institutional objectives so important as a basis for determining the relevance of departmental objectives.

(2) *Intermediate objectives*

Since most schools—or even programmes—are organized into departments or divisions based upon bodies of knowledge, an intermediate level of statements of purpose is necessary. Intermediate, or departmental, objectives are fashioned by cooperative deliberation of

members of a department, division, or chair and may be quite broad. While more specific than institutional objectives, these statements are still rather " directional " in nature and are not precise descriptions of what students should be able to perform.

The relationship between departmental and institutional objectives in the case of a medical school is well described in the work of Miller and his associates.

> Each department is responsible for some part of the education of a medical student, *but no department should forget* that it is no more than a part of the whole school which is responsible for the education of the whole student and the fulfillment of the overall objectives. Departmental objectives necessarily grow out of the overall objectives and are related to them at every turn. If they do not contribute to the overall goals they are extraneous. If they conflict with the overall goals they should be eliminated. (Miller et al., page 89)

The strong language in the above quotation (e.g., " extraneous ", " eliminated ") may be offensive to some. From the standpoint of sound educational planning, however, the directness of the words is appropriate. The failure of many educational planning efforts can be traced to the absence of intermediate level objectives, which are often the " missing link ". A school will sometimes manage to produce a statement of institutional objectives, and many individual teachers, profiting from the work of Mager, Kemp, and others, will produce their own well stated specific instructional objectives; but departments remain semi-isolated little units of teaching or, as some have referred to them, " almost autonomous fiefdoms with fierce territorial prerogatives ". Thus, a school may spend several years in a comprehensive, cooperatively achieved curriculum change only to discover that certain departments still insist that, no matter what the school curriculum, they know what is best for the student and will continue to do things their way. While many individuals are incorporating into their own teaching the prior definition of specific instructional objectives, lack of cooperation at the departmental level often results in additional learning problems for students.

(3) *Specific instructional objectives*

It is in this area that the most remarkable progress has been made in the last decade and a half. Beginning with the classic and significant work of Robert Mager in 1962, educators have truly grasped the nature of these " specific instructional objectives " through learning how to state them. At last, a teacher who wishes to can define beforehand exactly what it is he expects as a result of his teaching efforts, whatever

teaching technique he may select. Moreover, he can state the objective(s) in a way that will communicate to others the exact performance expected. Quite simply, specific instructional objectives describe what student "learning" is expected in the familiar three domains—knowledge (cognitive), skills (psychomotor), and attitudes (affective)—as a result of the instruction.

It is this level that is most critically important in the life of an individual teacher and thus in the lives of students. There is already some evidence (and more data are being accumulated) suggesting that when teachers state specific instructional objectives and then share them with their students, student learning is enhanced. Surely that fact alone should encourage more teachers to take the time to define specific objectives. Obviously, from the standpoint of the school, specific instructional objectives should be derived from the departmental objectives, which in turn should grow out of the institutional objectives. The interrelationships and interdependence between these three levels should be under constant review.

NON-STUDENT-ORIENTED "OBJECTIVES"

Throughout this annex, as stated on page 24, an educational objective is taken to mean one that describes the *student* performance or behaviour expected to result from learning. However, it is not infrequent to find in the literature statements that are referred to as "objectives" but that are not student-oriented. In order for a teacher to help his students learn, for example, he must set certain goals for himself. In order to enable teachers to fulfil such teaching obligations, the school in turn has to set other goals. The next two sections expand briefly on these and other non-student-oriented goals. It is imperative to keep in mind when reading these two sections that they are the only parts of this annex dealing with aims that are *not* learner-oriented. This is why the term "objective" has been avoided.

Institution-oriented goals

An educational institution may have obligations beyond the education and training of its students. A medical school, for example, may be expected by society not only to educate medical students but also to generate new knowledge through research conducted by its staff members, to provide for patient care in hospitals affiliated with the school, and to design and test better methods of providing health care in the society or

community that it serves. These other—often competing—goals of the institution must be acknowledged and considered when educational (learning) objectives proper are formulated.

In general, whether they refer to student education or other concerns, institution-oriented goals are usually expressed in terms of the intent of the institution rather than in terms of the desired outcome. Such statements refer to what will be " provided " by the school, what will be " offered ", what will be " maintained "—in other words, what the *school* is going to do. Samples of institution-oriented goals concerned with student education are as follows.

With regard to medical education, the school will
- — offer a multi-track curriculum
- — provide laboratory experience in the basic sciences
- — include a personal/professional counselling programme
- — rotate students through clerkships in six medical specialties.

Notice that these statements express only what the *school* is trying to do, not what the teachers will do—let alone what the students are expected to perform. In terms of our definition, these are not true or acceptable objectives. But they do help one to understand the complete set of responsibilities of the school and illustrate the relationship between " process " objectives (i.e., what the school plans to do) and " product " objectives (i.e., what the school expects to happen as a result).

Teacher-oriented goals

Similarly, it is sometimes helpful to be reminded that teachers may be expected to do more than mere teaching (including planning and evaluation activities). Teachers may be expected by the school to participate in patient care, to engage in research, to become active in community-related health activities—all as part of the school's broader set of institutional purposes.

However, even in the sphere of teaching proper the teacher can have goals expressed in terms of his own activities. For example :

The teacher will
- — supervise students working in the laboratory
- — make rounds with students
- — read and evaluate students' case notes.

These statements describe what the teacher intends to do, not what the student is expected to learn as a result. But an essential criterion by which to judge whether the teacher has been successful (or whether

the school has been, for that matter) is the students' success in learning what was expected of them. " What was expected of them " should, of course, be expressed in student-oriented objectives. These are the subject of the remainder of this annex.

WHY DEFINE OBJECTIVES ?

As trite as it must seem to many by this time, the quotation from Lewis Carroll's *Alice in Wonderland* used by Miller and his associates still offers much in response to the question, " Why define objectives ? "

> " Would you tell me, please, which way I ought to go from here ? "
> " That depends a good deal on where you want to get to ", said the Cat.
> " I don't much care where ... " said Alice.
> " Then it doesn't matter which way you go ", said the Cat.
> " ... so long as I get *somewhere* ", Alice added as an explanation.
> " Oh, you're sure to do that ", said the Cat, " if you only walk long enough."

There can be no possible argument against the proposition that one should know what one wants to do before doing it. As Wynne Harlen states it, " One must have a clear idea of what it is one wants to do before setting out to do it ... " ; he also says, " ... if teachers are to guide learning then they must have some criteria for guiding one way rather than another " (Harlen, page 225). Adding to thinking in this area, Moxley says: " To the extent that goals are vague and subjective, their attainment will be vague and subjective. To the extent that goals can be specified, their attainment can be specified " (Moxley, page 30). There is simply no question that knowing what it is one wants to achieve will influence how one goes about it and how much one achieves. Nor is there any question that greater efficiency results when one knows one's goals. The only real question is what specific benefits there are that warrant a teacher's taking the time to formulate specific instructional objectives and to participate in the formulation of intermediate and institutional objectives.

Benefits to society

As defined earlier, an objective at any level is a statement of what it is that the learner is expected to do (or be able to do) at the conclusion of his educational experience. In the case of a health worker, a complete set of objectives would certainly include a description of the tasks he is to perform, the role he is to play, and the health care he is to provide. It is obviously in the interest of society as a whole as well as of its indi-

vidual members that both the student and his teachers should know what those objectives are and whether they have been achieved. More specifically, objectives help to protect the people served by health workers—the consumers of health services—and aid in the rational provision of health manpower, as described below.

(1) *Protection of consumers of health services*

A good statement of objectives can provide the basis for the certification process that is designed to protect the consumer. Only those students who have demonstrated the acceptable level of performance will be certified as eligible to provide the type of health care for which they have been trained. Of course, certification can be on other bases than demonstrated competence in specified tasks. The variable most commonly used is "time": in line with the logic of the Cat, some programmes equate time spent in the education process with the achievement of (unspecified) objectives. But without a statement of objectives, the certification process suffers significantly. One important reason for defining objectives, therefore, is to contribute to the protection of the consumer by providing a more rational basis for the certification of health workers.

(2) *Systematic provision of health manpower*

Each society is faced with the difficult problem of planning for and providing the manpower necessary to deliver health care to its population. It is always helpful for planners to know in advance exactly what the graduates of different programmes will be capable of doing. Such information will enable them to make more intelligent decisions about the allocation of resources to support the education and training of various health workers as well as informed decisions about manpower deployment. It is particularly helpful for both educational and manpower planners to have a clear definition of the tasks to be performed by the various members of the health care team. A statement of these tasks is the natural companion to a good set of objectives and should in fact be one of the sources provided by health manpower planners from which the objectives are derived.

Benefits to the educational institution

A school for health workers is responsible for studying itself. Knowing that it exists for some purpose, which should be stated explicitly, a school reviews its reason for being, its activities, and its achievements

primarily to ascertain whether it is " doing what it is supposed to do ". Some call this total process " evaluation ". In the case of a school, there may be three different objects of evaluation: (1) the students, (2) the programme, and (3) the teachers. For each of these, evaluation depends mainly upon, and thus requires, a clear statement of objectives.

(1) *Evaluation of students*

Since it is universally agreed that schools exist for the purpose of educating (and training) students, they have the responsibility of determining whether their students are learning. Most familiarly, this assessment takes the form of an examination. But no matter what the form, any assessment procedure must start with the answer to the question: " What are the students supposed to learn ? " The answer to that question, of course, can be found in the learning objectives. Thus, a set of clear, correctly stated objectives is the basis for evaluation of students.

In the absence of a good statement of objectives the gap is filled by student examinations and other assessment procedures, which perforce *become* the objectives. Thus, one more potent argument for spending the time and effort to state objectives is that failure to do so means abdication of the teachers' responsibility and a consequent licence to external bodies to define the objectives.

Stating objectives in a comprehensive manner will also help avoid undue emphasis on assessment of those educational outcomes that are most readily and easily " measured ". The progress made during the past 30 years in educational measurement of the acquisition and retention of information has led to excessive use of written examinations—excessive in light of the fact that careful scrutiny of a comprehensive set of objectives would reveal many objectives whose achievement cannot be measured in a written test.

(2) *Evaluation of programme*

In this instance, data about student performance again form the basis for evaluative judgements. The educational programme is deemed to be successful or not according to how well students have learned what they were supposed to learn. Again, therefore, the prior statement of learning objectives is essential.

Programme evaluation is discussed here separately from student evaluation because it requires additional data, may call for different methods of data collection, and demands a special evaluation design. Moreover, programme evaluation requires reference to institutional and teaching goals that are not learner-oriented (see pages 27–29) in order

to determine, for example, whether the programme does indeed "provide", "offer", or "include" what was promised.

(3) *Evaluation of teachers*

Educational institutions are making increasing efforts to enhance the effectiveness and efficiency of teaching by evaluating the teachers. While most of these efforts seem to be centred on how well the instructor teaches, once again it is quite clear that a very important basis for judging the effectiveness of a teacher and/or his teaching is how well his students have learned, i.e., how well they have achieved the learning objectives.

It is interesting to note that all three types of evaluation (student, programme, and teacher) require data on student learning as the basis for judgement. Only the methods of data collection, research design, and certain other necessary information vary from one type of evaluation to another. The institution is responsible for all three areas of evaluation.

(4) *Cost-effectiveness in use of resources*

It naturally follows that an institution with evaluative data is in a position to study its need to conserve resources and make the best use of them. A clear and explicit statement of objectives is the basis for all these activities.

Benefits to the teachers

Thus far, only those benefits accruing to society and its institutions have been mentioned here. Teachers—particularly in schools where strong emphasis is placed on other teacher activities (e.g., doing research and publishing scientific papers)—may very well ask, "What do I stand to gain from defining objectives? Why should I spend my valuable time in such an activity when my career depends on my publishing articles or taking care of patients?" The answer lies in what the teacher can learn about himself as a teacher.

(1) *Self-appraisal*

The great majority of teachers are honestly and sincerely interested in self-assessment. Even the most lackadaisical teacher asks himself at the end of a lecture, "I wonder if the students grasped my point". Of course, he needs to know just what that "point" was in order to answer the question. Only if that information has been stated explicitly in

terms of desired learning—as an objective—can the teacher judge himself in the role of facilitator of such learning.

(2) *Planning*

Most teachers are interested enough in teaching and in their students to want to plan carefully for their education. Two major pieces of information are needed for planning: (*a*) what the students have learned, and (*b*) what they are expected to learn. The latter, obviously, can be found in a statement of objectives — and student evaluation is useful only if it is related to those objectives. But even aside from the question of student evaluation, it is logical for the teacher to plan the learning experiences only after specifying what he expects students to learn.

(3) *Student evaluation*

Part of the responsibility of a teacher is evaluating his students. This again involves specifying what students are expected to learn and determining the extent to which each has been successful. Unless there are stated objectives against which to compare student learning, educational measurement (e.g., the giving of examinations) does not fulfil the teacher's obligation to "evaluate" his students. Evaluation *includes* the specification of educational objectives.

Benefits to the learners

There are three major areas in which students can benefit from the careful formulation and statement of objectives. This applies to objectives at all three levels, and particularly at the specific instructional level.

(1) *Feedback*

Educational psychologists tend to agree, no matter what their school of thought about learning, that learning is more efficient when the students are given information about their own learning. This process is sometimes referred to as feedback. But for students to find such information useful, they must also know what it is they were expected to learn. "Feedback begins with a clear understanding of what the course is all about, its purpose and detailed objectives. With this as a starting point the student has something to aim at, to work toward . . . frequent appraisal . . . provides him with enough information to capitalize upon the opportunity for learning which is offered day by day" (Miller et al., pages 71, 72).

(2) *Guidance of learning*

Teaching itself is sometimes referred to as " guidance of learning activities ". If such is the case, it is clearly incumbent upon the teacher to provide the students with a clearly specified set of objectives. Cecil Clark says : " The student will feel a greater focus and direction on what is important, on what to study for, and on what he will be evaluated. Surveys and anecdotal reports . . . consistently suggest that . . . the major advantage that comes from using instructional objectives [is specific direction and focus] " (Clark, page 30).

In the absence of a statement of objectives, it is quite clear that students simply try to anticipate the examination procedures. Their anxiety level becomes an obstacle to good learning. They fear that they may not be preparing correctly for impending examinations. As the students at one medical school wryly expressed it, " We have the best course in anatomy of any medical school in the country ; what they don't cover in the lecture and laboratory, they ' cover ' in the final examination. "

While the data are still scanty, there are a number of studies demonstrating that a good, thorough statement of objectives placed in the hands of students may result in more learning (without any " instruction " at all) than occurs in a conventionally taught group of learners—even when their instruction is carefully planned with the use of the same set of objectives (see article by Hastings). All in all, it is quite clear that student learning is enhanced when it is guided by objectives.

(3) *Self-assessment*

A final benefit to students is that educational objectives provide them with the opportunity to assess themselves and make necessary adjustments in their own learning activities. That is, apart from " feedback " uses and guidance of learning activities as described above, a set of objectives can encourage students to begin what should become a lifelong habit : self-assessment.

SOURCES OF EDUCATIONAL OBJECTIVES

There are two main reasons for examining the sources of educational objectives. The first is that one can understand and judge the value of an educational objective better when one knows its derivation. Miller and his associates are concerned with this point in their discussion of " overall " objectives : " In order to understand fully the meaning and

the implication of such statements [of objectives], it is important to identify their ultimate source, for they do not spring full-blown from the head of a dean or committee" (Miller et al., page 81). The second reason is that educational objectives are meant to serve a particular population and should logically be derived from a study of its needs. Of course, the objectives of medical education may be expected to differ from one society to another, the objectives of education for nurses and other health workers similarly. But in all cases the objectives must be relevant to and stem from the needs of the population to be served.

From what sources, then, should objectives for student health workers be derived? Broadly speaking, there are four sources: (1) the needs of the society served by the school and its graduates, (2) the nature of the health profession, (3) the application of the scientific method, and (4) the relationship of the local health services to health manpower development.

Society's needs

The societal needs of importance here are those related to the provision of health care and the maintenance of health. Every health worker school must examine the society it serves before stating its educational objectives. The review of society's needs is required mostly at the institutional level; intermediate and specific instructional objectives should flow from the institutional objectives.

(1) *Society's health problems*

A school for health workers must be concerned with the health problems of its own society. A nursing or medical school, for instance, must know what diseases are common in the region in order to define its institutional objectives. If nutritional health problems abound, one would expect that the objectives would reflect the need to deal with those problems. If there were a high prevalence of problems associated with aging in a given society, one would expect such a school to take that fact into consideration when defining its objectives.

The important consideration here is that different societies have different problems and that the schools serving those societies may therefore be expected to have different objectives as dictated by those needs. As soon as an institution begins the process of defining its objectives, it should formulate a generally acceptable statement of the health problems of the society it serves. *How* that is done is not our concern

here [1]; what is of concern is that the institutional objectives should reflect the health needs of society.

(2) *Society's view of health care*

When the needs of society are being considered as a source of relevant educational objectives for health workers, it is important to examine how members of that society look upon health care and how they feel health care should be provided. If they believe that each family should receive all its care from a personal (or family) physician, that belief should be considered when objectives are drawn up. If they feel that preventive health measures are the proper domain of the physician, that view too should be taken into account. A word of caution: such views should be treated not as actual determinants of objectives but merely as useful information for those who formulate objectives.

Nature of the health profession [2]

For any given health profession, there is a tradition of services offered by its practitioners and expected and/or accepted by consumers of those services. Indeed, historically, the nature of the profession grows out of the working conditions, practices, and background of its practitioners. These characteristics are sometimes at odds with the reality of society's needs, but the fact remains that the nature of a society's health professions is bound to exert a major influence on the objectives of its health professions schools.

(1) *Working conditions*

Defining objectives for student health professionals without taking account of the practitioners' actual working conditions may lead to preparing them for work they cannot hope to achieve. For example, in a society in which equipment for performing a brain scan is not currently or foreseeably available, it would probably be unwise for a medical school to include in its objectives—and thus in its educational programme —the performing of a scan. And if in a given society there are legally enforced restrictions against a nurse's making a diagnosis and/or pre-

[1] This process is dealt with in, for instance, WHO Technical Report Series, No. 481, 1971 (Report of a WHO Scientific Group on the Development of Studies in Health Manpower); and *Health manpower planning—principles, methods, issues*, Geneva, World Health Organization (in press).

[2] The points made in the following sections are applicable to health workers in general but above all to what are traditionally considered the health professions.

scribing a drug, it seems pointless for a nursing school to include in its objectives the learning of diagnostic and prescribing skills, so long as legal restrictions are not modified. Consideration must also be given to the resources that society is ready to invest in the health sector.

(2) *Tasks performed*

Obviously, what nurses actually do when they are performing as nurses in their society is an important consideration when determining objectives for a school of nursing in that society. Obviously, what physicians do in a given society can help medical educators realize what their graduates have to know and what they must be able to perform well. The significance of the health tasks actually being performed by the practitioners of a given health profession as regards educational objectives cannot be disputed. But it is an open question how much importance should be attached to these tasks as compared with the tasks that *ought* to be performed. There are times when members of the academic community of a given health profession disagree with members of the practising community with regard to the appropriateness of certain practices. There may even be times when members of society disagree with both the academic and practising members of the profession as to what health tasks should be performed. Some kind of consensus must be obtained. However, there is no question that what the practitioners of a given profession are actually doing must be taken into consideration when educational objectives are formulated, and it is the responsibility of educators to be fully aware of current practices.

(3) *Availability of practitioners*

The objectives of a school for health professionals should also reflect the availability of practitioners of that profession in society. This is not always the case. In developed countries, for example, because of a complex network of motivations and values there is a tendency for medical schools to set as a primary institutional goal the preparation of "academic" physicians rather than to acknowledge that such a goal must take second place to the preparation of primary health care physicians who will provide services in the community, where they are far more needed. Such a tendency is a good illustration of what happens when an institution does not show appropriate concern for the availability of health personnel in its society.

This is not to say that the objectives of a school for health professionals are to be determined solely by the availability (or lack) of such personnel in that society. The point being stressed here is rather that the avail-

ability of personnel is one more factor to be incorporated into the thinking that produces the educational objectives of schools for health professionals.

(4) *Background of practitioners*

Besides listing the health tasks performed by members of a given health profession, one should look into the education, training, qualifications, personal traits, and especially the motivation of those already practising the profession. The nature of the profession is profoundly shaped by the characteristics of its practitioners. Educators must find out what the practising professionals are really like when they develop educational objectives for students of that profession.

Application of the scientific method

Yet another source of educational objectives in the case of student health professionals is the "scientific method". A profession can be defined as an occupation that involves the application of basic scientific principles to the solution of human problems dealt with by members of that profession. In the case of health professions, the scientific disciplines contributing to the problem-solving processes include physiology, pharmacology, and pathology, and such social sciences as psychology, sociology, and anthropology. Health professionals have traditionally leaned heavily not only on the bodies of knowledge represented by these disciplines but also on the fairly formal problem-solving approach inherent in all health-related sciences. The value placed on the "scientific method" by health professionals suggests that it surely deserves a place in the thinking of those who formulate educational objectives for health profession schools.

Problems of health services and health manpower development

Closely related to the health problems of a society, but separate from them, are the problems society faces in finding, educating, and allocating personnel to manage its health problems. These problems of health service conditions and manpower development again differ from one society to the next, and they must be taken into account by those who set educational objectives. For example, one problem may be the lack of adequate service conditions for trained personnel. The availability of teachers with adequate competence to deal with a changing educational situation may also need consideration. Another problem may be that individuals qualified to be educated and/or trained in a given

profession are not available. A health profession school may state its objectives only to find that they cannot be achieved with the students available from the manpower pool of that society. The objectives should at least reflect the status of society with regard to the availability of students. This does not mean that any one of these problems should become *the* determinant of the institution's objectives. What is suggested here is that the school should take into account the nature of the problems and reflect them in the objectives it sets.

By way of summary, no one of these sources is *by itself* a determinant of the educational objectives of schools for health workers. Instead, each should be examined for what it can contribute in the way of useful information for the generation of relevant objectives.

HOW TO STATE OBJECTIVES

By this point, it should be clear that a crucial level and type of objective is the specific instructional objective. It should be equally clear that, no matter what their level, objectives should be phrased in terms of what the student should " learn " as a result of the curriculum, the teaching, or other learning experiences. But stating objectives correctly requires communication skills as well as an understanding of what objectives are. It is not enough for a teacher to have in his mind objectives that are clear and well thought out. He must also be able to communicate these to students, to colleagues, and to any other interested parties qualified to review and understand them. Mager says it well:

> Basically, a meaningfully stated objective is one that succeeds in communicating to the reader the writer's instructional intent. It is meaningful to the extent it conveys to others a picture (of what a successful learner will be like) identical to the picture the writer has in mind. (Mager, page 10)

There are several key phrases in that quotation. The " writer's instructional intent " once again reminds us that a teacher has a reason for his teaching activities, i.e., promoting learning by students—learning that can be determined to have taken place by observing what students are doing (or are capable of doing) once the instruction is completed. The objective must therefore describe accurately enough " what a successful learner will be like " so that qualified observers will be able to determine whether a student has indeed learned what was expected of him. Last, the wording must be such that there can be no real disagreement about whether the student is exhibiting the desired behaviour —the objective must convey " a picture identical to [what the teacher]

has in mind ". Mager (page 10) sums it up by saying, " A [well] stated objective, then, is one that succeeds in communicating your intent. . . ".

But it is Jerrold Kemp who offers guidance in a way most helpful for the novice. He specifies that an objective is a precise standard and must answer the question, " What does the student have to do in order to show that he has learned what you want him to learn ? " (Kemp, page 23). Kemp goes on to offer a three-step procedure for stating objectives that is reproduced below with illustrations from medical education instead of those originally provided by Kemp.

1. Start with an *action verb* that describes a specific behaviour or activity by the learner :

Name
List
Perform
Respond

2. Follow the action verb with the *content reference* that describes the subject being treated :

Name the *bones in the human hand*
List the *steps in cell division*
Perform a *lumbar puncture*
Respond to a *patient's stated concern over his illness*

3. End with the *performance standard* that indicates the minimum acceptable accomplishment in measurable terms :

Name the bones in the human hand, *with an accuracy of at least 90%.*
List the steps in cell division, *omitting no more than one step and getting no more than one out of order.*
Perform a lumbar puncture *in five consecutive cases, obtaining the necessary amount (3 cm^3) of cerebrospinal fluid with a minimum of discomfort to the patient.*
Respond to a patient's stated concern over his illness *to the patient's satisfaction, as measured by his response to a questionnaire or interview afterwards.*

A fourth step is often added to Kemp's three, as follows :

4. Specify the main *conditions* under which the action is to take place, e.g., " by memory ", " given the data ", " with an electron microscope ".

The Kemp approach demonstrates that it is possible to state objectives in all three major learning domains (i.e., cognitive, affective, and psychomotor) in such a way as to communicate, quite accurately, exactly what it is the learner should have achieved after the course of

instruction. There can be little question whether a student has " named the bones in the human hand " as intended when it is also specified that the accuracy level demanded is "90%". And, once the educational measurement procedures have been developed, there can be no question whether the student has "'performed a lumbar puncture " at the acceptable level of performance. Finally, again after completion of the necessary educational measurement procedures, there should be no disagreement about whether the student has " responded to a patient's concern over his illness " to the " satisfaction " of that patient.

The most important single step in stating objectives is starting with an " action verb " (Kemp's step 1). All too often one encounters objectives based on the use of verbs that, as Mager and others point out, are " open to a wide range of interpretation ". Mager (page 11) offers an illustrative list of such non-action verbs, as follows :

to know
to understand
to appreciate
to grasp the significance of
to enjoy
to believe
to have faith in

Mager correctly says that from these verbs one would not be able to describe just what the learner would be doing (or would be capable of doing) if he " knew" certain facts, if he " understood " particular concepts, if he " appreciated " designated personnel roles. But it should be noted that these verbs *can* be used in objectives provided that they are followed by an action verb, e.g., " know the anatomy of the extremities well enough to *name* the bones of the hand with an accuracy of at least 90% ".

Many authors have developed lists of action verbs to help teachers state instructional objectives (Kemp; Mager; Gronlund; Ely & Gerlach; Holcomb & Garner; and Guilbert, among others). The important test for the teacher searching for the right verb is whether he can answer " yes " to this question : " Will students and teachers be able to tell from this verb when a student has ' learned ' what he was supposed to ? "

While these points are being made in connexion with specific instructional objectives, they are also applicable to some extent at the other levels. For institutional objectives, action verbs might be far too specific but it is still desirable to make the learner the subject of the verbs, otherwise one has not educational objectives but goals, aims, etc. The same is true of intermediate or departmental objectives, except that one

should take even more care to remember to make the learner the subject of the verbs chosen.

Because of the rather extensive work done on this subject in recent years, probably no more need be said about how objectives should be stated. The main concern at this point should be converting current knowledge about how to state objectives into criteria to help teachers decide whether their own educational objectives are adequate. Surely, the discussion above suggests that one criterion for specific instructional objectives is that they should be built around action verbs that describe what the student will be doing when he is demonstrating that he has achieved the objectives. But what about evaluating the other levels of objectives? And to what extent must specific instructional objectives be appraised in terms of the broader intermediate and institutional objectives? These and other questions of this nature are considered in the following section.

RECOMMENDATIONS FOR DEVELOPING CRITERIA FOR THE EVALUATION OF EDUCATIONAL OBJECTIVES

An early list of criteria for judging the adequacy of statements of objectives can be found in a book by William Wrinkle published in 1947. Wrinkle asks, "Is the objective (1) understandable, (2) stated as a behavior, (3) based upon the needs of the learner, (4) socially desirable, (5) achievable, and (6) measurable?" This list is truly remarkable because it appeared 30 years ago and therefore preceded by 15 years the significant work of Mager, who was the first to provide teachers with the tools, as well as the understanding and rationale, for developing sound, useful statements of objectives. And yet the Wrinkle criteria seem to contain virtually all of the important characteristics now sought in an objective.

(1) *Understandable*. All authors since Mager in 1962 have emphasized the importance of stating objectives so that others can understand them. Indeed, the trend seems to be accelerating: more and more educators are saying that if students are provided with statements of objectives they will in fact take care of their own learning. This could not happen if the objectives were not understandable.

(2) *Stated as a behaviour of the learner*. Clearly, not much happened in the 15 years between Wrinkle and Mager. It was the significant, and apparently original, contribution of the latter that compelled educators to recognize the importance of stating objectives " in terms of behavioural outcomes " or " in behavioural terms ". Yet Wrinkle said the same thing in 1947. (One cannot help speculating whether Wrinkle was repeating a generally held view of the times or expressing an original thought.) To be acceptable today, objectives are expected to be stated as a " behaviour " of the learner.

(3) *Based upon the needs of the learner*. The point here is that all objectives should be formulated with the learner in mind. Does the learner really need to know that ? Does he really need to know ho to do that ? Is it really important for him to develop those attitudes ? Some people criticize this criterion because it seems to depend totally on the learner for the definition of " need ". The broader definition of " need ", however, includes not only the expressed needs of the learner but those defined by the profession he will be entering, by the tasks he will be performing, and by his future professional role in responding to the community health situation.

(4) *Socially desirable*. How interesting to find this criterion in Wrinkle's list in light of the fact that the health needs of society are now recognized to be a major source of educational objectives for health workers. Surely, statements of objectives that meet the above criteria and that describe what students will ultimately do when they are performing the tasks for which they are being prepared would be termed " socially desirable ". And one can at least raise the question of how desirable objectives are if they do not seem to reflect the health needs of society.

(5) *Achievable*. This criterion seems more technical than substantive. It suggests that the objective should not be so divorced from reality as to lose its guidance effect on the teaching–learning situation. On the other hand, there is no implication that what is wanted is *immediate* achievability. The criterion merely cautions that, whatever the desired outcome of learning, it should be eventually achievable in that particular educational programme by the students who are there, under the prevailing conditions.

(6) *Measurable*. This final technical criterion implies that every objective at the specific instructional level should be narrowly focused and preferably contain only one performance standard so as to facilitate

its measurement. An objective that embraces more than one of the three domains of learning would most likely be too complex to meet this criterion. But even an objective limited to one domain, e.g., the affective, should single out no more than one attitude to be measured. With his criterion of measurability, in other words, Wrinkle reminds us to state an objective along the lines of a single dimension of learning.

But the problem of assessing the quality of an educational objective is too complex to be solved by the simple application of Wrinkle's criteria—or probably of any set of criteria. Is not more than one set of criteria needed : one for each of the three levels of objectives ? Do different reviewers of objectives—students, teachers, administrators, laymen—require different sets of criteria ? Should criteria be limited to the " technical " aspects of the statements of educational objectives ?

Two assumptions can be made at the outset. The first is that criteria for evaluating educational objectives should *not* be limited to their technical aspects (do they use an action verb ?) but should include substantive judgements (do they reflect a societal need ?). A second assumption is that emphasis should be given to the important level of specific instructional objectives, provided they are actually derived from relevant institutional objectives.

In the following section an attempt is made to derive further recommendations for criteria from a recapitulation of the main points made in this annex and some speculation thereon. These recommendations were used by the Study Group in its development of guidelines for the evaluation of educational objectives.

Recommendations

Since according to our definition of educational objectives there are three levels of objectives that are closely interrelated, the ultimate criteria should reflect this. Beginning with the specific instructional level, educators should be able to examine objectives for interrelationship and interdependence.

- *Recommendation 1.* The final criteria must reflect the fact that specific instructional objectives should be derived from intermediate or departmental objectives, which should in turn be derived from institutional objectives based themselves on societal needs. Where it is not possible to determine whether one level was actually derived from the other, it should at least be ascertained that there is a dependent-type relationship.

There remains a potential danger. Even if all specific instructional objectives are shown to bear a relationship to some intermediate objectives and these in turn to some institutional objectives, the sum total of the specific instructional objectives may very well fail to reflect adequately *all* the intermediate objectives; and the intermediate objectives may similarly fail to reflect all the institutional objectives. One criterion should deal with this problem.

- *Recommendation 2.* The final criteria should include some method of judging whether a complete set of objectives at a given level really serves all of the objectives at the next higher level.

There has been considerable discussion of the reasons why objectives should be defined, with a consideration of the various benefits that might accrue to society, the school, the teachers, and the students. In an evaluation it might be important to determine whether achievement of the objective under review will lead to any of these potential benefits (see pages 29–34).

- *Recommendation 3.* The final criteria should include a mechanism for determining whether an objective contributes to any of the following:
  - — protection of consumers of services
  - — systematic provision of manpower
  - — evaluation of students
  - — student self-appraisal
  - — evaluation of programme
  - — evaluation of teachers
  - — teacher self-appraisal.

Much has been said about the significance of the sources from which educational objectives are derived. Even in the case of a specific instructional objective one should be able to determine the extent to which it is truly derived from the health needs of society and therefore relevant.

- *Recommendation 4.* The final criteria must permit one to ascertain the extent to which even the most detailed specific instructional objective is derived from any one or combination of the following:
  - — health problems of society
  - — relation between health services and manpower development
  - — health personnel available
  - — society's view of health care

— health tasks performed by the health workers in question
— background of the practitioners of the profession
— working conditions of practitioners.

The criteria recommended thus far will obviously be subject to variations from one society to another, from one country to another, from one institution to another. Only when it comes to the manner in which objectives should be stated can there be universally valid criteria. Lest the reader feel that providing criteria in this area is of less importance, he should bear in mind that the average teacher will derive much benefit from a set of criteria for judging the quality of the *form* in which objectives are stated.

- *Recommendation 5*. The final criteria must enable the reader to judge how well an objective is stated from the standpoint of what is known about stating objectives. Perhaps such items can be derived from the early Wrinkle criteria listed above (pages 42–44). More than likely, however, such criteria will make reference to " action verbs ", to " content reference ", and to " performance standards ", all of which according to Kemp (see above, pages 40–41) should be in a statement of an objective.

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